Faculty of Science

NGEA31, Physical Geography: Geographical Information Systems - Basic Course, 15 credits

Naturgeografi: Geografiska informationssystem - grundkurs, 15 högskolepoäng

First Cycle / Grundnivå

Details of approval

The syllabus was approved by Study programmes board, Faculty of Science on 2022-11-18 to be valid from 2022-11-18, autumn semester 2023.

General Information

The course is a compulsory course at first cycle level for a Degree of Bachelor of Science with a specialisation in physical geography and ecosystem science and also given as an elective course for other programmes at the faculty of natural sciences. The course can certain years also be given as a freestanding course.

Language of instruction: English

Main field of studies	*Depth of study relative to the degree requirements*
Physical Geography and Ecosystem Science	G1F, First cycle, has less than 60 credits in first-cycle course/s as entry requirements
Geographical Information Science	G1F, First cycle, has less than 60 credits in first-cycle course/s as entry requirements

Learning outcomes

The aim of the course is to give basic knowledge about concepts and methods for treatment and analysis of geographic data with geographic information systems, (GIS) and an introduction to cartography and geodesy. Presentation of analysis result by using maps has strong emphasis and the students acquire knowledge of how to use these in an efficient and correct way, at both oral and written presentations.

Knowledge and understanding

On completion of the course, the students shall be able to:

- describe different conceptual models of spatial objects and phenomena

- describe different data models for digital spatial data (raster model and vector model), and understand the structures and how data are stored digitally
- account for basic spatial analytical methods
- give an account of basic methods for cartographic visualisation
- explain different map projections, geodesic reference systems and coordinate systems
- explain how basic interpolation methods function
- describe basic language and structure in databases

Competence and skills

On completion of the course, students shall be able to

- organise and handle digital geographic data
- independent and in groups carry out basic analyses of geographic data in raster and vector format using standard GIS software
- present work procedures from collection and analysis to result presentation of geographic data in oral and written form and through cartographic visualisation
- carry out and present simple statistical evaluations of interpolated spatial data
- Use simple database management systems (basic SQL)
- digitise objects from remote sensing data and use positioning equipment (GPS) for collection of geographic data

Judgement and approach

On completion of the course, students shall be able to

- demonstrate consciousness about the importance of, and self-confidence for, to use and analyse geographic information for issues in natural sciences, environment and community planning
- demonstrate a critical approach to geographic data and analysis results

Course content

The course gives a broad theoretical ground to wider work with digital geographic data. Understanding of representation and analysis of spatial elements are emphasised. The course also highlights general geographic problems within environment and society through practical GIS-applications. These deal with both Swedish and international conditions, and vary in scale from the local to the regional. The parts within GIS that are treated include basic cartography and projections, reference systems, geographic data in digital form (maps, images and tables), positioning with GPS, basic analysis of geographic data in raster and vector format and cartographic and graphical presentation of digital map material. In the course, training in oral and written communication is also included. Special emphasis is on cartographic presentation of digital geographic data.

Course design

The teaching consists of lectures, computer exercises; individual and in groups, field exercises and project work in groups. Computer exercises, field exercises and project work are compulsory.

Assessment

Examination takes place in writing in the form of examination during the course and through written presentations of assignments for computer and field exercises, and through written project work during the course that also be presented orally. Students who do not pass the regular exam will have an additional opportunity to resit the exam soon thereafter.

The examiner, in consultation with Disability Support Services, may deviate from the regular form of examination in order to provide a permanently disabled student with a form of examination equivalent to that of a student without a disability.

Subcourses that are part of this course can be found in an appendix at the end of this document.

Grades

Marking scale: Fail, Pass, Pass with distinction.
The grading scale for written examination is Fail, Pass and Pass with distinction, while the grading scale for written assignments and other compulsory components is Fail and Pass. To pass in the whole course is required approved examination passed written assignments in computer and field exercises and passed project work. The final grade is determined by the grade for the exam.

Entry requirements

Admission to the course requires general entry requirements, English 6/B and at least 30 credits scientific studies in physical geography, ecosystem science, biology, geology and environmental sciences, or equivalent.

Further information

This course replaces NGEA11 Physical geography: Geographic information systems, - introductory course and cannot be included in degree together with this course or together with:

NGEA05 Remote Sensing and GIS, 15 credits

GISA21 GIS: Geographical Information System – Introduction, 15 credits

GISU21 GIS: Geographical Information System – Introduction, 15 credits

The course is given at the Department of Physical Geography and Ecosystem Science at Lund University.

Subcourses in NGEA31, Physical Geography: Geographical Information Systems - Basic Course

Applies from H23

2301 Written exam, 7,5 hp
Grading scale: Fail, Pass, Pass with distinction
2302 Exercises, 3,7 hp
Grading scale: Fail, Pass
2303 Project work, 3,8 hp
Grading scale: Fail, Pass